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EXAMINER	
ALLEN, DENISE S	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/084,785	MIYAKE ET AL.
	Examiner	Art Unit
	Denise S Allen	2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,9-20,22-28 and 30-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,9-20,22-28 and 30-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 7, 9 – 20, 22 – 28, and 30 – 40 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claims 7, 10 – 20, and 34 are objected to because of the following informalities:

The limitation "positioned on an optical axis of light" (claim 7) is unclear because it does not indicate how the mirror is positioned relative to the optical axis (i.e. parallel, perpendicular, or coaxially) or how the mirror is positioned relative to the optical collimator.

The limitation "the light" (claim 7) lacks antecedent basis because it has not been previously recited. Suggested correction: replace the limitation with "light incident on the optical collimator".

The limitation "aligning a collimation lens and an optical fiber of an optical collimator" (claims 13 and 17) is unclear because it is not certain whether both the collimation lens and the optical fiber are part of the optical collimator. Suggested correction: replace the limitation with "aligning an optical collimator comprising of a collimation lens and an optical fiber".

The limitation "positioned on an optical axis of light" (claim 13) is unclear because it does not indicate how the optical collimator is positioned relative to the optical axis (i.e. parallel, perpendicular, or coaxially).

Claim 19 is unclear because it recites simultaneously holding at a position and moving the optical collimator. Suggested correction: change one of the recitations of the optical collimator to "the optical element".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7, 10, 11, 13 – 15, 17 – 19, 22 – 26, 30 – 32, 34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowen et al (US 4,509,827).

Regarding claims 7, 13, 17, 22, 23, 25, 26, 31, and 39, Cowen et al teaches a method of testing an optical collimator (Figure 4 references 30, 40, and 45) using a mirror (reference 27) positioned on an optical axis of light, the method comprising the steps of: moving the mirror at a first speed in a first direction intersecting the optical axis (column 4 lines 34 – 49); moving the mirror at a second speed in a second direction intersecting the first direction simultaneously with the movement in the first direction (column 4 lines 39 – 42 and web pages from www.oriel.com to show second direction); and measuring the intensity of the light while moving the mirror (column 4 lines 36 – 37). Cowen et al does not teach that the second speed is different from the first speed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use different speeds for moving the mirror in the first and second directions in the method of testing an optical collimator of Cowen et al in order to perform a grid search pattern or a raster scan pattern in order to move the mirror through the entire range of possible positions.

Regarding claims 10, 14, 18, 24, and 30, Cowen et al teaches a method of testing an optical collimator as described above. Cowen et al does not teach the step of storing positions of the mirror and the optical fiber at which a measured light intensity reaches a maximum.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a means for storing the positions of the mirror and the optical fiber for the method of testing an optical collimator of Cowen et al in order to be able to quickly return the mirror and the optical fiber to the best positions if they are inadvertently moved during testing.

Regarding claim 11, Cowen et al teaches the step of moving the mirror in a first direction includes the step of reciprocally rotating the mirror at the first speed about a first axis orthogonal to the optical axis, and the step of moving the mirror in a second direction includes the step of reciprocally rotating the mirror at the second speed about a second axis orthogonal to the optical axis (see web pages from www.oriel.com).

Regarding claims 13 and 17, Cowen et al further teaches aligning the optical collimator based on the result of measurement (column 4 line 66 – column 5 line 59).

Regarding claims 15 and 19, Cowen et al teaches the step of aligning includes the step of fixing the optical element at a position at which the measure light intensity reaches a maximum, and moving the optical collimator along the optical axis (column 4 line 34 – column 5 line 35).

Regarding claim 17, Cowen et al discloses the claimed invention except for which of the mirror and the optical collimator moves being reversed. Cowen et al teaches that the mirror moves and not the optical collimator. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse which of the mirror and the optical collimator moves, since it has been held that a mere reversal of working parts of a device

involves only routine skill in the art. One would have been motivated to reverse which of the mirror and the optical collimator moves for the purpose of reducing the possibility of damage to the mirror caused by vibration during movement.

Regarding claims 32 and 34, Cowen et al discloses the claimed invention except for the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would have been motivated to select the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz for the purpose of minimizing the time to position the mirror.

Regarding claim 39, Cowen et al further teaches arranging the optical collimator and the mirror on an optical axis of light such that the mirror reflects light emitted by the optical collimator and the optical collimator receives the reflected light (column 5 lines 43 – 58).

Claims 12 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowen et al in view of Palen et al (US 6,205,266).

Cowen et al teaches a method of testing an optical collimator as described above. Cowen et al does not teach the step of moving the mirror in a first direction includes the step of reciprocally sliding the mirror at the first speed along a first axis orthogonal to the optical axis, and the step of moving the mirror in a second direction includes the step of reciprocally moving the mirror along a second axis orthogonal to the optical axis at the second speed.

Palen et al teaches a method of moving one optical element relative to another optical element that includes the step of moving the optical element (Figure 4 reference 80) in a first direction by reciprocally sliding the optical element at the first speed (column 4 lines 1 – 3) along a first axis orthogonal to the optical axis (i.e. the x-direction column 3 lines 53 – 55), and the step of moving the optical element in a second direction by reciprocally moving the optical element along a second axis orthogonal to the optical axis (i.e. the y-direction column 3 lines 53 – 55) at the second speed (column 4 lines 1 – 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of moving an optical element of Palen et al to move the mirror in the method of testing an optical collimator of Cowen et al in order to align the optical axis of the mirror with the optical axis of the optical collimator and eliminate any undesirable vignetting.

Claims 16, 20, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowen et al in view of Francis (US 6,168,319).

Cowen et al teaches a method of testing an optical collimator as described above. Cowen et al further teaches the optical collimator has a collimation lens (reference 45), a tube (reference 30), and the optical fiber is disposed in the tube, and the step of aligning includes the step of moving the optical fiber along the optical axis (column 4 line 34 – column 5 line 35). Cowen et al does not teach the optical collimator has a capillary disposed in the tube for receiving the optical fiber.

Francis teaches an optical collimator (Figure 1 reference 10) that has a tube (reference 18), and a capillary (reference 14) disposed in the tube, for receiving an optical fiber (reference 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to

use the capillary of Francis in the optical collimator of Cowen et al in order to prevent the fiber end from bending and causing undesirable attenuation of light.

Claims 9, 13 – 20, 22 – 25, 27, 28, 30, 35, 37, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergmann et al (US 6,374,012).

Regarding claims 9, 13, 17, 22, 23, 25, 27, 28, 37, and 40, Bergmann et al teaches a method of testing a first optical collimator (Figure 10 producing the collimated beam reference 103) using a second optical collimator (reference 100) for receiving light irradiated from the first optical collimator and positioned on an optical axis of the first optical collimator, the method comprising steps of: moving the second optical collimator at a first speed in a first direction intersecting the optical axis (column 10 lines 28 – 30); moving the second optical collimator at a second speed in a second direction intersecting the first direction simultaneously with the movement in the first direction (column 10 lines 30 – 31); and measuring the intensity of the light while moving the second optical collimator (column 11 lines 37 – 39). Bergmann et al does not teach that the second speed is different from the first speed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use different speeds for moving the second optical collimator in the first and second directions in the method of testing a first optical collimator of Bergmann et al in order to perform a grid search pattern or a raster scan pattern in order to move the second collimator through the entire range of possible positions.

Regarding claims 13 and 17, Bergmann et al further teaches aligning the first optical collimator based on the result of measurement (column 11 lines 33 – 39).

Regarding claims 14, 18, 24, 30, and 35, Bergmann et al teaches a method of testing a first optical collimator as described above. Bergmann et al does not teach the step of storing the positions of the second optical collimator and the optical fiber at which a measured light intensity reaches a maximum.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a means for storing the positions of the second optical collimator and the optical fiber for the method of testing a first optical collimator of Bergmann et al in order to be able to quickly return the second optical collimator and the optical fiber to the best positions if they are inadvertently moved during testing.

Regarding claims 15 and 19, Bergmann et al teaches the step of aligning includes the step of fixing the optical element at a position at which the measure light intensity reaches a maximum, and moving the optical collimator along the optical axis (column 11 lines 29 – 39).

Regarding claims 16, 20, and 28, Bergmann et al teaches the optical collimator has a tube (reference 99), a collimation lens (reference 98), and a capillary (block to the left of reference 94) disposed in the tube, for receiving the optical fiber (reference 101), and the step of aligning includes the step of moving the optical fiber along the optical axis (column 11 lines 29 – 39).

Regarding claim 38, Bergmann et al discloses the claimed invention except for the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

One would have been motivated to select the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz for the purpose of minimizing the time to position the mirror.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergmann et al in view of Kiryuscheva et al (US 5,859,947).

Bergmann et al teaches a method for testing a first optical collimator as described above. Bergmann et al does not teach the step of moving the second optical element in a first direction rotates the second optical collimator about a first axis orthogonal to the optical axis and the means for moving the second optical collimator in a second direction rotates the second optical collimator about a second axis orthogonal to the optical axis.

Kiryuscheva et al teaches a means for moving (Figures 4 and 5 reference 110) an optical element (reference 102) that rotates the optical element about a first axis (reference C) that is orthogonal to the optical axis (out of the page at reference F) and about a second axis (reference E) that is orthogonal to the optical axis. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the rotational movement of Kiryuscheva et al in the step of moving the second optical collimator of Bergmann et al in order to align an optical axes of the optical collimators with each other and eliminate any undesirable beam steering.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The web pages from www.oriel.com are made of record to illustrate the features of the Model 1435 Laser Cavity Mirror Mount that is incorporated by reference in Cowen et al (column 4 lines 39 – 42).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (571) 272-2305. The examiner can normally be reached on Monday - Friday, 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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